



TECHNICAL UNIVERSITY OF MOMBASA

School of Applied and Health Sciences
DEPARTMENT OF PURE AND APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BACHELOR OF TECHNOLOGY IN INDUSTRIAL MICROBIOLOGY &
BIOTECHNOLOGY

ABT 4409 INDUSTRIAL ENZYMES

SPECIAL-SUPPLEMENTARY EXAMINATION PAPER 2

SERIES: DECEMBER, 2024 SERIES

TIME: 2 HOURS

DATE: DECEMBER, 2024

Instructions to Candidates

You should have the following for this examination

Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

QUESTION ONE (30 MARKS)

- | | |
|---|---------|
| a. Distinguish between protopectin and pectic acid. | 2 Marks |
| b. State the functions of the following enzymes. | 2 Marks |
| i. Rhamnogalacturonan hydrolases | 1 Mark |
| ii. Pectate lyase | 1 Mark |
| c. State any FIVE microorganisms that are good sources of alpha-Glucosidases. | 5Marks |
| b. Outline FOUR ways you would employ to obtaining improved strains of | |

microorganisms for industrial enzymes. 7 Marks

c. Outline FIVE types of cellulases based on the type of reaction catalysed. 10 Marks

d. Outline THREE sources of industrial enzymes. 6 Marks

QUESTION TWO (20 MARKS)

a. Explain the THREE major biochemical events in Cheese ripening. 15 Marks

b. Outline the merits of using microorganisms as sources of enzymes. 5 Marks

QUESTION THREE (20 MARKS)

Describe the properties of useful industrial microorganisms. 20 Marks

QUESTION FOUR (20 MARKS)

Discuss the applications of Pectinases in the following industrial sectors. 20 Marks

i. Textile processing and bioscouring of cotton fibers 4 Marks

ii. Degumming of plant bast fibers 3 Marks

iii. Waste water treatment 2 Marks

iv. Coffee and tea fermentation 3 Marks

v. Animal feed 4 Marks

vi. Improvement of chromaticity and stability of red wines 4 Marks

QUESTION FIVE (20 MARKS)

a. Discuss the applications of proteases in the following industrial sectors

i. Management of industrial and household waste 8 Marks

ii. Photographic industry 6 Marks

b. Discuss the applications of proteases in the following industrial sectors

i. Coffee and tea fermentation 2 Marks

ii. Animal feed
Marks

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